Weekly Report #4

Group Nr. 21: "Face Reconstruction"

February 15, 2022

1 Weekly Progress

Due to scheduling conflicts with other courses and projects, we were not able to make as much progress on the project during this week.

Dataset We found out that point cloud files are already available for the FaceGrabber dataset [2]. However, since we do not know the transformation between RGB and depth images, we cannot project our detected facial landmark on the point cloud. It seems to be a dead end for us with this dataset. We might need to explore other options for the dataset, including capturing our own dataset. Yet, in the meantime, we could make use of the point clouds to try out some optimisation methods.

Face Model Also, we continue our research on the face model. We furthered our understanding in the usage of the Basel Face Model [4], especially regarding the libraries necessary for implementing it. We found that Statismo[1], and EOS [3] are potentially useful as the library for the parametric face model.

- Tong Yan Chan (03722291): Write Matlab scripts converting pcd to ply, find libraries for parametric face model and trying to set them up
- Dushyant Anirudhdhabhai Dave (03728740): Busy with project for other course
- Daniel Schubert (03666228): Busy with project for other course; organize Intel RealSense L515 RGBD-Camera for our group to use
- Chang Luo (03759570): Write setup tutorial for project, tried to setup EOS and statismo libraries, did some research about the color-depth registration

2 Problems

Mostly scheduling conflicts and build system issues with the multitude of libraries under use. Since Statismo and EOS have not been updated recently, we found them difficult to set up. The instructions might be outdated and they also rely on other libraries, which we do not know which version they need.

3 Plan

To accelerate the progress in the next week, we have planned to meet up multiple times digitally and physically.

The next steps we plan for our project, similar to the previous week's, are:

- Start capturing our own data using Intel RealSense L515
- Align the depth map with color map
- Initial registration of Face model on the 3D point cloud
- Apply Rigid ICP as the initial state

References

[1] R. Blanc M. Luethi. Statismo: Flexible shape modeling framework.

[2] D. Merget, T. Eckl, M. Schwrer, P. Tiefenbacher, and G. Rigoll. Capturing facial videos with kinect 2.0: A multithreaded open source tool and database. *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2016.

[3] R. Tena P. Mortazavian W. Koppen W. Christmas M. Rtsch J. Kittler P. Huber, G. Hu. A multiresolution 3d morphable face model and fitting framework, 2016.

[4] Clemens Blumer Bernhard Egger Marcel Lthi Sandro Schnborn Thomas Gerig, Andreas Morel-Forster and Thomas Vetter. Morphable face models - an open framework, 2018.